

NON-PUBLIC?: N
ACCESSION #: 8804040096
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Susquehanna Steam Electric Station - Unit 1 PAGE: 1 of 3

DOCKET NUMBER: 05000387

TITLE: Reactor Scram Following Inadvertant Bumping of 230KV Switchyard
Relay

EVENT DATE: 03/04/88 LER #: 88-006-00 REPORT DATE: 03/29/88

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: Richard R. Wehry, Power Production Engineer
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SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: At 1207 hours on March 4, 1988, with Unit 1 operating at 100% power, a System Operating Technician inadvertently bumped a sensitive protective relay in the 230 KV Switchyard while performing calibration on another relay. The relay tripped, causing switchyard breakers to open, isolating Unit 1 from the Power Grid. The resulting generator load unbalance tripped the Main Turbine, via Control Valve Fast Closure, which resulted in a Reactor Protection System actuation, causing a scram. All equipment operated per design during the transient, ESF Systems were not challenged and no operator actions were required to place the unit in a stable condition. System Operating and Substation personnel have been advised of the incident and cautioned about bumping sensitive relays. The subject relay, which protruded about six inches out of the front of the relay panel, was replaced with a flushmounted relay and protective barriers have been installed above and below the subject relay to protect against bumping.

(End of Abstract)

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DESCRIPTION OF EVENT

At 1207 hours on March 4, 1988, with Unit 1 operating at 100% power, a

System Operating Technician bumped relay 32SWX in the 230 KV Switchyard while performing calibration of another protective relay. Relay 32SWX is a high speed ASEA ARMX-1 relay that is very sensitive to bumps from above or below. The relay was bumped on top as the technician lowered his arms from the relay being tested in a relay compartment located approximately 12 inches above the 32SWX relay. The 32SWX relay tripped, isolating Unit 1 from the Power Grid. The resulting generator load unbalance tripped the Main Turbine, via Control Valve Fast Closure. The Control Valve Fast Closure, from energization of the Emergency Trip Supply, resulted in a Reactor Protection System actuation, causing a reactor scram.

In addition, because reactor power was greater than 24%, the EOC-RPT resulted in a trip of both Reactor Recirculation Pumps via the RPT Breakers. The Turbine Bypass Valves opened as the pressure in the Main Steam Lines increased above the pressure setpoint of 920 psig, and Safety Relief Valves A, B, E, and L lifted at approximately 1063 psig. Reactor pressure, which had been 996 psig prior to the scram, peaked at 1072 psig with all 5 Turbine Bypass Valves and Safety Relief Valves A, B, E, and L open.

Reactor water level, which had been controlling at +36 inches before the scram, reached a minimum of 10 inches before recovering. The Turbine Bypass Valves were open initially for 25 seconds, and the A, E, and L SRVs were open for 6 seconds, with the 'B' SRV open for 8 seconds.

During the initial transient reactor pressure reached a minimum of 885 psig before stabilizing at the Turbine Bypass Valve pressure setpoint of 920 psig. The drop in reactor pressure corresponds to a 10 degree F decrease in saturation temperature when compared with the initial reactor operating conditions. The administrative and Tech Spec limits on Reactor Cooldown Rate were never approached.

All control rods inserted fully and the immediate actions of EO-100-001 (reactor scram) were performed following the scram. Primary Containment Integrity was maintained throughout the transient and no discernible changes were noted in drywell temperature and pressure, or in suppression pool temperature, pressure and level. In addition, there were no indications of fuel damage and no releases of radioactive material resulting from the transient as evidenced by a comparison of SPING data obtained prior to and following the scram.

All equipment operated per design during the transient, ESF systems were not challenged, and no operator actions were required to place the unit in a stable condition.

CAUSE OF EVENT

The reactor scrammed as a result of a System Operating Technician's error when he inadvertently bumped the 32SWX relay in the 230 KV Switchyard. This opened the Generator West and Generator Tie circuit breakers, removing all paths for Unit 1 output power generation. The resulting power to load unbalance caused a main turbine trip which resulted in a scram on Control Valve Fast Closure with power greater than 24%.

REPORTABILITY/ANALYSIS

This event was determined reportable per 10CFR50.73(a)(2)(iv) in that an unplanned Engineered Safety Feature (ESF) actuation occurred when the RPS System initiated an automatic reactor scram. The plant was safely shut down and there were no safety consequences or compromise to public health or safety during this incident. Generator Load Rejection is an analyzed event in the Final Safety Analysis Report (FSAR), Chapter 15.

CORRECTIVE ACTIONS

The reactor scram resulted from a technician accidentally bumping a very sensitive relay while performing calibration on another protective relay. System Operating and Substation personnel have been advised of the incident and cautioned about bumping sensitive relays. The subject relay, which protruded about six inches out of the front of the relay panel, was replaced with a flush-mounted relay and protective barriers have been installed above and below the 32SWX relay to further protect against bumping.

ADDITIONAL INFORMATION

A similar generator load rejection occurred on July 15, 1984. This incident was reported to the Commission in LER 84-034-00. The July 15, 1984 incident was caused by a phase to phase fault on the 230 KV transmission line. A review of plant response determined that the two transients compared very closely.

ATTACHMENT # 1 TO ANO # 8804040096 PAGE: 1 of 1

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March 29, 1988

U.S. Nuclear Regulatory Commission
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SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 88-006-00
FILE R41-2
PLAS - 307

Docket No. 50-387
License No. NPF-14

Attached is Licensee Event Report 88-006-00. This event was determined reportable per 10CFR50.73(a)(2)(iv) in that the Reactor Protection System actuated upon a Turbine Control Valve Fast Closure resulting from a Generator Power/Load Unbalance.

/s/ R.G. Byram
R.G. Byram
Superintendent of Plant - Susquehanna

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